



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, ET AL.

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
**POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME**

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

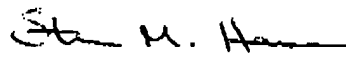
We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

 9/2/03

Steven M. Hansen

Date

Sam Luis Samuels

Date

Richard Allen Hayes

Date

Arnold Francis

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [REDACTED]

E 101615- 98

PURPOSE Document idea

Sam L Samuels
[REDACTED]

SEND INFO TO TBLISS
EMAIL: TBLISS@POTTERANDERSON.CO
PHONE: 778-6173
[REDACTED] 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods - although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystal® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien
[REDACTED]

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystal(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surllyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

NO WRITING UNDER INSERT

EXPERIMENTER

[Signature]

DATE

[REDACTED]

WITNESSED BY

[Signature]

DATE

[REDACTED]

Exhibit 2

D-289

Best Available Copy

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: Author: HANSEN Cost Code: 844-051 DRT-2-018-1
Object of Test: PET w/ 0.05% K₂CO₃
Operator (8-4): (4-12): W. Suggs (12-8): L. S.

MONOMER CYCLE

Patrol	Test Limits	1700	2000	2100	2200	2335				
Batch Temp.	240°	45	170	178	220	230				
Bot. Col.		53	133	140	194	185				
Top Col.		27	90	82	107	101				
Drop Line		28	157	122	111	201				
Drop Valve		29	150	113	107	282				
MeOH Rec. Level	620	0	0	3000	4800	088				
2G Rec. Level	500	0	0	0	0	500				
Still Dow Vent		30	21	31	21	81				
		225	227	280	277	280				

	DMT	2C	KF-8 Cat.	Ingredients Added TIO.	Inhibitor	Time 1900	Ingredients Removed	MeOH	2C
Time	1900	1900	1900						
Amount	40 #	267	42.6 GR			26 W/Kevlar (1853) 1 #		2200	2235
								5400	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOCLAVE CYCLE

Patrol	Test Limits	2250	2350	0050	0150	0355				
Batch Temp.	280°	268	272	280	279	265				
Clave Pressure		D.T.	D.T.	D.T.	2.2	---				
Agitator RPM		12	12	12	3	72				
Air Pressure		37	27	27	20	---				
Ext. Valve		270	280	280	288	280				
Ext. Nozzle		290	291	291	291	290				
Vapor Take-off		284	292	298	297	276				
Clave Dow Vent		296	303	302	304	283				
Vapor Take-off Flange		298	302	305	304	282				
		286	293	293	292	274				

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded..... Cut Flake..... 36.0 lbs Waste 2.2 lbs

Sample No's: Beginning..... RV..... Middle..... RV..... End..... RV..... Dashed RV.....

RUNNING LOG

Time
1900 Chopped still and firing heat on.
2130 Road out part on still, to help MeOH to come off.
2210 Mark stop again, off, switched to 2G cycle.
2235 2G cycle completed, preparing to drop batch to Clave.
2250 Batch in Clave, started agit. and D.T.
0110 Air pressure at 35 PSI, lowered agitator to 8 RPM
0120 Air pressure at 35 PSI, lowered agitator to 6 RPM.
0125 Air pressure at 30 PSI, lowered agitator to 3 RPM
0130 Air pressure at 20 PSI, preparing to start batch
0230 Completed gassing batch, Clave draining, sample to lab.
0240 Blew keel, blew cold traps, put Clave under vac.
0255 Charged 30 lbs of 2G for CBO, set agitator at 17 RPM, took partial
0515 Extended CBO, blew cold traps, put Clave under vac.
0615 Checked leak rate at 14.4 mm/hr.
0824 0.2. 0.8.4
0840 Batch 1A 5411 out from Clave

POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 8414-08511 DRT: 2-018-2

Object of Test PET W/ 0.05% KEVLAR

Operator (84) 84 (4-12) W. Segg (128) 1.5.

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added			26 W/KEVLAR (1.532)	Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor		Test Ingredients	MeOH	2G
Time	0630	0630	0630				0630	0955	0915
Amount	40 lbs	26 lbs	42.6 CL				1 lbs	600	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MoOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits									
			0936	1030	1130	1215		1455		
Batch Temp.			264	271	279	279		254		
Clave Pressure			7.7	7.7	7.7	2.6		—		
Agitator RPM			12	12	12	3		12		
Air Pressure			27	27	26	21		—		
Ext. Valve			280	280	279	279		779		
Ext. Nozzle			291	291	291	290		291		
Vapor Take-off			282	290	296	285		282		
Clave Dow Vent			281	289	304	272		269		
Vapor Take-off Flange			291	259	303	306		285		
			283	289	284	288		283		

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 36.0 Cut Flake 22.4 Waste 2.6

Sample No's.: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

Time

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
= 8:30 82. 2844
0800 Batch TA Still on main cycle
0855 main cycle complete, process Temp At 213°C. Main Switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to clave.
0930 Batch TA clave. Started D.T. And A9 later took patrol Heat OFF Still
1156 Air Pressure At 35 PSI. Lowered A91 Speed TO 9 RPM'S
1300 Air Pressure At 35 PSI. Lowered A91 Speed TO 6 RPM'S
1210 Air Pressure At 30 PSI. Lowered A91 Speed TO 3 RPM'S
1215 Air Pressure At 21 PSI. Lowered A91 TO 1 RPM. PREPARING TO EVACUATE
BATCH
1336 Completed Casting Batch Clave DRAINING.
1420 Blew Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR line Valve.
1435 Charged CIBA TO Clave
1645 Extended R.D. from cold trap & put clave under Vacs. (B/C cooling)
1840 Check leak rate @ 4.8 mm Hg

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 944-251 DRT: 2-019-1

Object of Test PET w/ 0.1% Kevlar

Operator (8-4) (4-12) *W. Sugg* (12-8) *L.S.*

MONOMER CYCLE

Patrol	Test Limits		1900	2000	2100	2850							
Batch Temp.			44	167	193	226							
Bot. Col.			36	189	170	174							
Top Col.			27	74	111	92							
Drop Line			262	233	242	288							
Drop Valve			223	202	201	239							
MeOH Rec. Level			0	0	4800	09							
%C Rec. Level			0	0	0	500							
Still Dow Vent			31	30	31	31							
			279	278	277	280							

K.P. 8			Ingredients Added		2G w/ KEVLAR (1.25%) Ingredients Removed			
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G
Time	1900	1930	1900			1900	2135	
Amount	40 F	26 F	42.6 GR			2.2 g	62.00	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed..... (check). Time Extension started...0055; completed...0200

Total Polymer Extruded..... Cut Flake 31.8 163 Waste -1.5 163

Sample No's.: Beginning.....RV.....Middle.....RV.....End.....RV.....Desired RV.....

RUNNING LOG

Time	RUNNING LOG
1900	Changed still & turned heat on.
2135	Next cycle completed, switched to 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave started agit. and DT.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed raising batch, Clave transferring.
0315	Completed blowing feet, blowing Cold traps, and jugging Clave under Vac.
0330	Changed 30 W of 2G for CBO, DDT at 12 KPS, tank gaseal.
0445	Extended CBO, blow Cold traps, put Clave under Vac.
0600	Checked leak rate at 9.6 mm/hr.

POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-0251 DRT: 2-09-2

Object of Test PET w/ 0.1% Kevlar

Operator (84) L446 (4-12) (12-8) L.S.

MONOMER CYCLE

[illegible]

AP-7				Ingredients Added		2G NYNEX (1.852)		Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0620	0620	0620			0620	0820	0825	
Amount	40 lbs	26 lbs	426 lbs			2.2 lbs	1000	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits		0845	0915	1015	1130		1230				
Batch Temp.			264	271	277	278		286				
Clave Pressure			DT	DT	DT	26						
Agitator RPM			12	12	12	3		12				
Air Pressure			29	28	17	20						
Ext. Valve			280	280	280	280		280				
Ext. Nozzle			290	290	290	290		290				
Vapor Take-off			270	280	294	295		285				
Clave Dow Vent			282	285	281	280		285				
Vapor Take-off Flange			280	294	298	298		287				

Valve to Instr. Line Closed..... -- (check), Time Extrusion started 11:30; completed 11:30

Total Polymer Extruded: 30.0 Cut Flake: 28.2 Waste: 1.8

Sample No's.: Beginning RV Middle RV End RV Desired RV

4KV / 6.97

Time

RUNNING LOG

0630	Changed ingredients to Shell
0625	Turned on agit and heat, took Patrol,
0830	MEDH cycle Comp. Switched to 2B cycle!
0835	2B cycle Comp. Preparing to Drop, Agitate,
0845	Batch in Close - Started DT. Started agitation @ 12 RPM.
1108	Pressure 35 PSI, Lowered to 8 RPM's.
1120	Pressure 35 PSI, Lowered to 6 RPM's
1125	Pressure 30 PSI, Lowered to 3 RPM's
1130	Pressure 20 PSI, Preparing to Expand Batch
1230	Comp Cooling. Close draining.
1310	Stop CT & Heat. Close under Vap.
1430	Close 30" 2B to Close for CGO, agitation @ 12 RPM.
1530	Expanded CGO, Stop CT. Close under Vap.
1730	Checked back rate @ 8.0 m ³ /hr.

POLYMER BATCH UNIT

Date Started: Author: HANSEN Cor. Code: 941-0471 D.R.T. 2-020-1Object of Test: PET W/ 0.5% KevlarOperator (8-4) (4-12) W. Sugg (12-8) L.S.

MONOMER CYCLE

Patrol	Test Limits		1800	1900	2000	2020						
Batch Temp.			47	174	196	206						
Bot. Col.			48	147	177	153						
Top Col.			44	87	129	101						
Drop Line			277	246	255	292						
Drop Valve			289	223	228	240						
MeOH Rec. Level			0	500	500	OFF						
2C Rec. Level			0	0	0	500						
Still Dow Vent			31	30	31	31						
			281	277	277	277						

KP-8			Ingredients Added			2C W/ Kevlar (2.27%)			Ingredients Removed	
Time	DMT	2C	Ca	TIO ₂	Inhibitor	Test Ingredients	MeOH	2C		
Amount	1800	1800	1800			1800	2005	2020		
	40#	26#	42.6 lb.			8.8 lbs	6200	500		

Time Batch dropped to Clave Press. on empty clave mm Hg. in min.MeOH Receiver valve OPEN when vessel is empty (check).

AUTOCLAVE CYCLE

Patrol	Test Limits		2025	2125	2225	2310						
Batch Temp.			261	267	277	279						
Clave Pressure			0.7	0.7	0.7	3.3						
Agitator RPM			12	12	12	3						
Air Pressure			29	28	28	20						
Ext. Valve			280	280	279	275						
Ext. Nozzle			290	291	291	291						
Vapor Take-off			266	285	293	294						
Clave Dow Vent			280	291	298	278						
Vapor Take-off Flange			281	290	297	255						
			281	281	288	283						

Valve to Instr. Line Closed (check). Time Extrusion started 2310; completed 2400Total Polymer Extruded Cut Flake 26.8 lbs Waste Sample No's: Beginning , RV , Middle , RV , End , RV , Desired RV

RUNNING LOG

Time	
1800	Charged still and turned hot on.
2005	Most comp. switched to 2C cycle.
2020	2C cycle comp. preparing to drop batch to Clave
2025	Batch in Clave started agit. at 12 RPM.
2245	Air pressure @ 35 PSI. Lowered agit. to 8 RPM.
2300	Air pressure @ 35 PSI. Lowered agit. to 6 RPM.
2305	Air pressure @ 30 PSI. Lowered agit. to 3 RPM.
2310	Air pressure @ 20 PSI. Preparing to extrude batch.
2400	Completed casting batch. Clave draining.

PATENT

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EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
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DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
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Ser. No. 10/809,470
Docket No. AD7006 USNA

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Date


Sam Louis Samuels

8/18/2008

Date

Louis

Richard Allen Hayes

Date

Arnold Francis

Date

Exhibit 1

TITLE New Product/Process Concept

DATE [REDACTED]

E 101615- 98

PURPOSE Document idea

Sam L Samuels
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For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystar® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien
[REDACTED]

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystar(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surlyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

NO WRITING UNDER INSERT

EXPERIMENTER

[Signature]

DATE

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WITNESSED BY

[Signature]

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Exhibit 2

D-289

Best Available Copy

**"Dacron"® Research Laboratory
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Object of Test: PET w/ 0.05% Kevlar

Operator (8-1): (4-12): W. Suggs (12-8): L. S.

MONOMER CYCLE

Patrol	Test Limits																			
Batch Temp.	240°		1700	2000	2100	2200	2235													
Bot. Col.			45	170	178	220	230													
Top Col.			53	133	140	191	185													
Drop Line			27	90	82	107	101													
Drop Valve			28	157	122	111	201													
MeOH Rec. Level	600		29	150	113	107	282													
2G Rec. Level	500		0	0	3000	4800	080													
Still Dow Vent			0	0	0	0	500													
			30	31	31	31	81													
			275	277	280	277	280													

	DMT	2C	KP-8 Cat.	Ingredients Added NO.	Inhibitor	Time 1900	Ingredients Removed	MeOH	2G
Time	1900	1900	1900						
Amount	40 #	267	42.6 G			26 w/Kevlar (1.85%)		2200	2235
						1 #		5400	500

Time Batch dropped to Clave: Press on empty clave: mm Hg. in: min.

MeOH Receiver valve OPEN when vessel is empty: (check).

AUTOCLAVE CYCLE

Patrol	Test Limits																			
Batch Temp.	280°		2250	2350	2050	0150		0355												
Clave Pressure			268	272	280	279		265												
Agitator RPM			D.T.	D.T.	D.T.	2.2		—												
Air Pressure			12	12	12	3		120												
Ext. Valve			37	27	27	20		—												
Ext. Nozzle			280	280	280	280		280												
Vapor Take-off			290	291	291	291		290												
Clave Dow Vent			294	292	297	297		296												
Vapor Take-off Flange			296	303	302	304		293												
			298	302	305	304		292												
			286	293	293	292		274												

Valve to Instr. Line Closed: (check). Time Extension started 0.135; completed 0.230

Total Polymer Extruded: Cut Flake: 36.0 lbs Waste: 2.2 lbs IV .583

Sample No's: Beginning: RV: Middle: RV: End: RV: Desired RV:

RUNNING LOG

1900 Chopped still and turn heat on.
2130 Raced out point on still to help MeOH to come off.
2220 Mark stop again, off switch, to 24 cycle.
2235 2G cycle, completed, preparing to drop batch to Clave.
2250 Batch in Clave, adjust agit. and D.T.
0110 Air pressure at 35 PSI, lowered agitator to 8 RPM.
0120 Air pressure at 35 PSI, lowered agitator to 6 RPM.
0125 Air pressure at 30 PSI, lowered agitator to 3 RPM.
0130 Air pressure at 30 PSI, preparing to start batch.
0230 Completed washing batch, Clave draining, sample to lab.
0240 Blew head, blew Cold Temp, put Clave under vac.
0255 Charged 30 lbs of 26 lbs C80, set agitator at 12 RPM, took partial.
0515 Extended C80, blew Cold Temp, put agitator at 12 RPM, took partial.
0615 Checked leak rate at 14.4 mm/hr.
— 8-24-67—B8-7
0800 Batch TA 5411 out of CAN CHAB

POLYMER BATCH UNIT

Date Started: [redacted] Author: HANSEN Cost Code: 844-0851 DRT 2-08-2

Object of Test P51 W/ 0.05% KEVLAR

Operator (84) 840 (4-12) W. Segg (128) L.S.

MONOMER CYCLE

Patrol	Test Limits
	0635 0735 0835 0915
Batch Temp.	56 175 191 226
Bst Col.	56 149 164 146
Top Col.	54 87 111 91
Drop Line	288 246 236 292
Drop Valve	268 246 247 228
MeOH Rec. Level	0 1350 5220 6550
2C Rec. Level	0 0 0 500
Still Dow Vent	31 30 31 31
CIAVE Batch	221 279 277 219

RP-8				Ingredients Added		26 W/KEVLAR (1.53)		Ingredients Removed	
	DWT	2G	Ca.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0630	0630	0630			0630	0955	0915	
Amount	40 lbs	26 lbs	42.6 G.			1 lbs	600	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MoOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 30.0 Out Flake 22.4 Waste 2.6

Sample No's.: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

Time

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
= 8:20 82. 894
0800 Batch TA Still on main cycle
0855 main cycle complete, process Temp At 213c. will Switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to Clave.
0930 Batch TA Clave. Started D.T. And A9-Lake took patrol Heat OFF Still
1156 Air Pressure At 35 PSI. lowered A9-L Speed TO 9 KPMs
1210 Air Pressure At 35 PSI. lowered A9-L Speed TO 6 KPMs
1210 Air Pressure At 30 PSI. lowered A9-L Speed TO 3 KPMs
1215 Air Pressure At 21 PSI. lowered A9-L TO Idle preparing to Empty
Batch.
1326 Completed Casting Batch Clave. DRAINING.
1420 Blow Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR line Valve.
1435 Charged Ciba. To Clave
1643 Extended R.D. Blow cold Traps & put Clave under Vacs. (B.O. cooling)
1840 Check leak rate @ 4.8 m/h

D-289

"Dacron"® Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code 8444051 DRT. 2-019-1Object of Test: PET w/ 0.1% KEVLAROperator (8-4) W. S. May (4-12) W. S. May (12-8) L. S.

MONOMER CYCLE

Patrol	Test Limits													
Batch Temp.			1900	2000	2100	2250								
Bot. Col.			44	169	193	226								
Top Col.			36	129	170	174								
Drop Line			27	74	111	92								
Drop Valve			262	233	242	298								
MeOH Rec. Level			223	202	201	239								
2G Rec. Level			0	0	4800	09								
Still Dow Vent			0	0	0	500								
			31	30	31	31								
			279	278	277	280								

KP-8			Ingredients Added			2G w/ KEVLAR (1.5%)			Ingredients Removed	
Time	DMT	2G	Cat.	TIO	Inhibitor	Test Ingredients	MeOH	2G		
Amount	1900	1930	1900			1900	2135			
	40.5	36.5	42.6	6K		2.2	62.00			

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOClave CYCLE

Patrol	Test Limits													
Batch Temp.			2200	2300	2400	0050								
Clave Pressure			269	277	278	279	270							
Agitator RPM			0.5	0.5	0.5	2.7	—							
Air Pressure			12	12	12	3	12							
Ext. Valve			27	28	28	22	—							
Ext. Nozzle			280	280	280	280	281							
Vapor Take-off			290	291	290	291	291							
Clave Dow Vent			285	294	292	297	291							
Vapor Take-off Flange			285	301	291	300	294							
			294	301	296	301	294							
			287	271	287	290	284							

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.055; completed 0.200Total Polymer Extruded..... Cut Flake 31.8 162 Waste -1.5 162

Sample No's.: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

Time

RUNNING LOG

1900	Changed still & turned heat on
2135	Monomer cycle completed, switched to 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave, started agit. and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed pasting batch, Clave transitioning.
0305	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Changed 30 ml of 2G for CBO, ppt. at 12 rpm, kept control.
0445	Extended CBO, blew cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"* Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HAUSEN Cox Code: 844-0251 DRT: 2-09-2

Object of Test PET w/ 0.1% KEYLAR

Operator (84) 446 (4-12) (12-8) LS

MONOMER CYCLE

[illegible]

AP-8				Ingredients Added		2G 4/NEAR (1.858)		Ingredients Removed	
	DMT	2G	Gr.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0620	0620	0620			0620	0820	0825	
Amount	40 lb.	26 lb.	426 lb.			2.2 lbs	1000	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Laminar		0845	0945	1045	1130		CBP				
Batch Temp.			264	271	277	278		143				
Clave Pressure			DT	DT	DT	26		296				
Agitator RPM			12	11	12	3		12				
Air Pressure			29	28	17	20						
Ext. Valve			280	240	280	250		200				
Ext. Nozzle			290	260	280	290		290				
Vapor Take-off			270	280	294	295		285				
Clave Dow Vent			202	295	311	300		265				
Vapor Take-off Flange			280	294	294	294		287				

Valve to Instr. Line Closed..... (check), Time Extrusion started.....: completed.....

Total Polymer Extruded 30.0 Cut Flake 28.2 Waste 1.8

Sample No's.: Beginning RV Middle RV End RV Desired RV

4KV / 6.97

Time

RUNNING LOG

0620 Changed ingredients to Shell
1625 Turned on agit and heat, tank Patrol,
0830 MODH cycle Comp. Switched to 2G cycle.
0835 2G cycle Comp. Preparing to Drain Agitator
0845 Batch in class - Started DT. Started agitator @ 12 RPM.
1105 Pressure 35 PSI, Lowered to 8 RPM's.
1120 Pressure 35 PSI, Lowered to 6 RPM's.
1125 Pressure 30 PSI, Lowered to 3 RPM's.
1130 Pressure 29 PSI, Preparing to Expand Batch
1230 Comp. Cooling, Class draining.
1310 Slow CT. & Heat. Class under Vap.
1430 Chg 30" 2G to class for 080, agitator @ 12 RPM.
1530 Increased CSO, Slow CT. Class under Vap.
1720 Checked leak rate @ 8.0 m.u./hr.

Object of Test PET W/ 0.5% KENLAR

Operator (84) W. Suggs (4-12) W. Suggs (12-8) L.S.

Operator (8-4) (4-12) *W. Suggs* (12-8) *L.S.*

Patrol	Test Limits	1800	1900	2000	2100					
Batch Temp.		47	174	196	206					
Bot. Col.		48	147	177	153					
Top Col.		44	97	129	101					
Drop Line		277	246	255	292					
Drop Valve		289	223	228	240					
MeOH Rec. Level		0	500	5800	855					
EC Rec. Level		0	0	0	500					
Still Dow Vent		31	30	31	31					
		281	277	277	277					

Kp-8				Ingredients Added		26 W/Kevlar (2.27)	Ingredients Removed	
	DMT	2G	Cc	HO.	Inhibitor	Test Ingredients	MeOH	2G
Time	1800	1800	1800			1800	2005	2020
Amount	40#	26#	42.6 cc.			8.8 lbs	6200	500

MeOH Receiver valve OPEN when vessel is empty.....(check).

[illegible]

Total Polymer Extruded	Cut Flake	26.8 lbs	Waste
------------------------	-----------	----------	-------

Sample No's: Beginning RV Middle RV End RV Desired RV

1900	Charged still and turned hot on.
2005	Most comp. changed to 2 G cycles.
2020	2 G cycle comp. preparing to change batch to chive.
2025	Batch in chive started agit. cal. DT.
2245	Air pressure @ 35 PSF. Lowered agit. to 8 RPM.
2300	Air pressure @ 35 PSF. Lowered agit. to 6 RPM.
2305	Air pressure @ 30 PSF. Lowered agit. to 3 RPM.
2310	Air pressure @ 20 PSF. Preparing to extend batch.
2400	Completed cooking batch. Clava draining.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, *ET AL.*

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

Ser. No. 10/809,470
Docket No. AD7006 USNA

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

Steven M. Hansen

Date

Sam Luis Samuels

Date



Richard Allen Hayes

8/12/2008
Date

Arnold Francis

Date

Exhibit 1

TITLE

New Product/Process Concept

DATE

E 101615- 98

PURPOSE

Document idea

Sam L Samuels

SEND INFO TO TBLISS

EMAIL:

TBLISS@POTTERANDERSON.CO

PHONE

778-6173

8/8 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods -- although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystal® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystal(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surlyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

NO WRITING UNDER INSERT

EXPERIMENTER

DATE

WITNESSED BY

DATE

Exhibit 2

D-289

"Dacron"® Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-001 D.R.T. 2-018-1

Object of Test: PET W/ 0.05% Kevlar

Operator (8-4): W. Sugg (432) W. Sugg (128) L. S.

MONOMER CYCLE

Patrol	Test Limits																			
Batch Temp.	210°		1700	2000	2100	2200	2235													
Bot. Col.			45	170	178	220	230													
Top Col.			23	133	140	191	185													
Drop Line			27	90	82	107	101													
Drop Valve			28	157	122	111	201													
MeOH Rec. Level	600		29	150	113	107	292													
2G Rec. Level	500		0	0	3000	4000	000													
Still Dow Vent			0	0	0	0	500													
			30	31	31	31	81													
			215	277	290	277	280													

	DMT	2C	KP-8 Cat.	Ingredients Added	Time	Ingredients Removed
Time	1900	1900	1900	TIO.	Inhibitor	Test Ingredients
Amount	40 #	26 #	42.6 #			26 # / Kevlar (1.85%)
						1 #
						5400
						500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOClave CYCLE

Patrol	Test Limits																			
Batch Temp.	280°		2350	1350	0050	0150	0355													
Clave Pressure			268	272	280	279	265													
Agitator RPM			D.T.	D.T.	D.T.	2.2	---													
Air Pressure			12	12	12	3	72													
Ext. Valve			37	27	27	20	---													
Ext. Nozzle			280	280	280	280	280													
Vapor Take-off			290	291	291	251	290													
Clave Dow Vent			284	292	298	297	276													
Vapor Take-off Flange			296	303	302	304	282													
			298	302	305	304	282													
			286	293	293	292	274													

Valve to Instr. Line Closed..... (check). Time Extrusion started 0.135; completed 0.230

Total Polymer Extruded..... Cut Flake 30.0 lbs Waste 2.2 lbs

IV 583

Sample No's: Beginning..... RV..... Middle..... RV..... End..... RV..... Desired RV.....

Time RUNNING LOG

1900	Charged still and turn heat on.
2130	Read out point on still to help MeOH to come off.
2210	Mark stop again, off, switched to 2G cycle.
2235	2G cycle completed, switching to drop batch to Clave.
2250	Batch in Clave, started agit. and D.T.
0110	Air pressure at 35 PSI, lowered agitator to 8 RPM
0120	Air pressure at 35 PSI, lowered agitator to 6 RPM
0125	Air pressure at 30 PSI, lowered agitator to 3 RPM
0130	Air pressure at 20 PSI, preparing to heat batch
0230	Completed gassing batch, Clave draining sample to lab.
0240	Blew keel, blew Cold Temp, put Clave under vac.
0255	Charged 30 lbs of 2G for CBO, set agitator at 12 RPM, took patrol
0315	Extruded CBO, blew Cold Temp, put Clave under vac.
0315	Checked leak rate at 14.4 mm/hr.
0324	0.27 1.85%
0330	Batch ID 5411 out from Clave

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-0511 DRT: 2-08-2

Object of Test PET w/ 0.05% KEVLAR

Operator (84) 840 (4-12) W. Suggs (12-8) 1.5

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		26 W/KEVLAR (1.53)		Ingredients Removed	
	DMT	2G	Ca.	TIO ₂	Inhibitor	Test Ingredients	MeOH	2G	
Time	0630	0630	0630			0630	0935	0915	
Amount	40 lbs	26 lbs	42.6 G			1 HS	6100	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits								
		0936	1030	1130	1215		1455		
Batch Temp.		264	271	279	278		254		
Clave Pressure		7.7	7.7	7.7	2.6		—		
Agitator RPM		12	12	12	3		12		
Air Pressure		27	27	26	21		—		
Ext. Valve		280	280	279	279		279		
Ext. Nozzle		291	291	291	290		291		
Vapor Take-off		282	290	296	295		282		
Clave Dow Vent		281	289	304	272		269		
Vapor Take-off Flange		291	289	303	300		285		
		283	289	294	288		282		

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 36.0 Out Flake 27.4 Waste 2.6

Sample No's: Beginning RV Middle RV End RV Desired RV

Three

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
= 8:20 82. B.H.
0800 Batch TA Still on moon cycle
0855 moon cycle complete, process Temp At 213c will switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to clave.
0930 Batch TA clave. Started D.T. And A9 later took patrol Heat OFF Still
1150 Air Pressure At 35 PSI. Lowered A91 Speed TO 9 LPMs
1210 Air Pressure At 35 PSI. Lowered A91 Speed TO 6 LPMs
1210 Air Pressure At 30 PSI. Lowered A91 Speed TO 3 LPMs
1215 Air Pressure At 21 PSI. Lowered A91 TO 1 LPM preparing to Evacuate
Batch.
1320 Completed Casting Batch Clave. DRAINING.
1420 Blow Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR Line Valve.
1430 Charged Ciba. TO clave
1645 Extended R.D. Blow cold traps + put clave under Vacs. (BU cooling)
1840 Check leak rate @ 4.8 mm Hg

D-289

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 844-2571 DRT: 2-019-1

Object of Test PET w/ 0.1% Kevlar

Operator (8-4) (4-12) (12-8)

MONOMER CYCLE

[illegible]

K.P.-8				Ingredients Added		2G w/ KEUJAN (1.25%) Ingredients Removed		
	DMT	2G	Cat.	TiO ₂	Inhibitor	Test Ingredients	MeOH	2G
Time	1900	1900	1900			1900	2135	
Amount	40 F	26 F	42.6 GR			2.2 g	62.00	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits								
			2200	2300	2400	0050			
Batch Temp.			269	277	278	279		270	
Clave Pressure			D.T.	D.T.	D.T.	2.7		—	
Agitator RPM			12	12	12	3		12	
Air Pressure			27	28	28	22		—	
Ext. Valve			280	280	280	280		281	
Ext. Nozzle			290	291	290	291		291	
Vapor Take-off			285	294	292	297		291	
Clave Dow Vent			285	301	291	300		294	
Vapor Take-off Flange			284	301	296	301		294	
			287	291	287	290		284	

Valve to Instr. Line Closed..... (check). Time Extension started 0055; completed 0200

Total Polymer Extruded _____ Cut Flake 31.8 163 Waste -1.5 163

Sample No's.: Beginning.....RV.....Middle.....RV.....End.....RV.....Desired RV.....

Time RUNNING LOG

1900	Changed still & turned heat on.
2135	Mix cycle completed, switched to 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave started agit, and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed washing batch, Clave draining.
0315	Completed blowing feed, blowing cold traps, and jugging Clave under vac.
0330	Changed 30 gal of 2G for CBO, eq'd. at 12 RPM, tank patrol.
0445	Extended CBO, blew cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cont Code: 944-0251 DRT 2-09-2

Object of Test PET w/ 0.1% KEVLAR

Operator (84) 434 (412) 128 LS

MONOMER CYCLE

[illegible]

AP-8				Ingredients Added		2G 4 NEMAR (LPSZ)		Ingredients Removed	
	DMT	2G	Cat	HO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0620	0620	0620			0620	0820	0825	
Amount	40 lb	26 lb	426 lb			2.2 lbs	6000	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Laminar							680				
Batch Temp.			094/5	094/5	104/5	1130		1430				
Clave Pressure			264	271	277	278		286				
Agitator RPM			DT	DT	DT	26						
Air Pressure			12	12	12	3		12				
Ext. Valve			29	28	17	20						
Ext. Nozzle			280	280	280	280		280				
Vapor Take-off			290	290	290	290		290				
Clave Dow Vent			270	280	294	285		285				
Vapor Take-off Flange			282	285	281	300		285				
			280	294	298	288		287				

Valve to Instr. Line Closed..... (check), Time Extrusion started... 11:30 : completed 12:30

Total Polymer Extruded 30.0 Out Flake 28.2 Waste 1.8

Sample No's.: Beginning RV Middle RV End RV Desired RV

4KV / 6.97

Zero

RUNNING LOG

0620	Changed log-sprints to 5 min.
0625	Turned on agit and heat tank Patrol.
0830	MOON cycle Comp. Switched to 28 cycle.
0835	26 cycle Comp. Preparing to Day Patrol.
0845	Batch in Close - Started DT. Started agitation @ 12 RPM.
1100	Process @ 35 PSI, Lowered to 8 RPM's.
1120	Process @ 35 PSI, Lowered to 6 RPM's.
1125	Process @ 30 PSI, Lowered to 3 RPM's.
1130	Process @ 20 PSI, Preparing to Expand Bed.
1135	Comp. Conting. Close draining.
1320	Slow CT. & Heat. Close under Vap.
1430	Close 30" 26 to Close for 200, agitation @ 12 RPM.
1530	Expanded 250, Slow CT. Close under Vap.
1720	Checked back note @ 8.0 m after.

"Dacron"[®] Research Laboratory
POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 9415-0471 D.R.T. 2-020-1

Object of Test: PET w/ 0.5% KENLAR

Operator (8-4) (4-12) W. Sugg (12-8) L.S.

MONOMER CYCLE

Patrol	Test Limits	1800	1900	2000	2020						
Batch Temp.		47	174	196	206						
Bot. Col.		48	142	177	153						
Top Col.		44	87	129	101						
Drop Line		277	246	255	292						
Drop Valve		289	223	228	240						
MeOH Rec. Level		0	500	500	OFF						
2G Rec. Level		0	0	0	500						
Still Dow Vent		31	30	31	31						
		281	277	277	277						

K4-8 Ingredients Added				2G W/ K2VLAR (2.272) Ingredients Removed			
Time	DMT	2G	Ca	NO.	Inhibitor	Test Ingredients	MeOH
1800	1800	1800				1800	2005
Amount	40#	26#	42.6 lb.			8.8 lb.	6200

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty..... (check).

AUTOClave CYCLE

Patrol	Test Limits	2025	2125	2225	2310						
Batch Temp.		261	267	277	279						
Clave Pressure		0.7	0.7	0.7	3.3						
Agitator RPM		12	12	12	3						
Air Pressure		29	28	28	20						
Ext. Valve		280	280	279	275						
Ext. Nozzle		290	291	291	291						
Vapor Take-off		266	285	293	294						
Clave Dow Vent		280	291	298	278						
Vapor Take-off Flange		281	290	297	255						
		281	281	288	283						

Valve to Instr. Line Closed..... (check). Time Extrusion started 2310; completed 2400

Total Polymer Extruded..... Cut Flake 26.8 lbs. Waste.....

Sample No's: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

RUNNING LOG

Time	
1800	Charged still and turned heat on.
2005	MeOH cycle comp. switched to 2G cycle.
2020	2G cycle comp. preparing to change batch to Clave.
2025	Batch in Clave attached agit. and AT.
2245	Pin pressure @ 35 PSI. Lowered agit. to 8 RPM.
2300	Pin pressure @ 35 PSI. Lowered agit. to 6 RPM.
2305	Pin pressure @ 30 PSI. Lowered agit. to 3 RPM.
2310	Pin pressure @ 20 PSI. Preparing to extrude batch.
2400	Completed casting batch. Clave draining.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:
STEVEN M. HANSEN, *ET AL.*

APPLICATION NO.:
10/809,470

FILED:
MARCH 25, 2004

FOR:
POLYESTERS CONTAINING MICROFIBERS,
AND METHODS FOR MAKING AND USING SAME

GROUP ART UNIT:
1796

EXAMINER:
IRINA ZEMEL

ATTORNEY DOCKET NO.:
AD 7006 USNA

DECLARATION UNDER 37 C.F.R. § 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In the Non-Final Office Action mailed on March 19, 2008, the Examiner rejected Claims 1-8, 11-13, and 30-31 under 35 U.S.C. § 103(a) as being obvious over Philippoz *et al.* (WO 02/083794 A2; hereinafter "Philippoz PCT") and further rejected Claims 9-10 and 32 under 35 U.S.C. § 103(a) as being obvious over Philippoz in view of Vercesi *et al.* (U.S. Patent No. 6,068,922; hereinafter "Vercesi"). The International Publication Date of Philippoz PCT is October 24, 2002. The U.S. counterpart application to Philippoz PCT is U.S. Patent Application No. 09/833,456 (hereinafter "Philippoz US"), published on December 12, 2002, as U.S. Patent Application Publication No. 2002/0187291.

We declare that the presently claimed invention was reduced to practice in the United States prior to the publication date of Philippoz PCT (October 24, 2002) and Philippoz US (December 12, 2002). Further to this declaration, we attach signed notebook pages, with dates redacted, that demonstrate conception (Exhibit 1) and exemplify the reduced to practice invention (Exhibit 2).

As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I

Ser. No. 10/809,470
Docket No. AD7006 USNA

also declare that all statements were made with knowledge that willful false statements, and the like, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and any such willful false statements may jeopardize the validity of either the patent application or any patent issuing thereon.

Respectfully Submitted,

Steven M. Hansen

Date

Sam Luis Samuels

Date

Richard Allen Hayes

Date

Arnold Frances 8/13/08
Arnold Frances
e

Date

Exhibit 1

TITLE New Product/Process Concept

DATE

E 101615- 98

PURPOSE Document idea

Sam L Samuels

SEND INFO TO TBLISS

EMAIL:

TBLISS@POTTERANDERSON.CO

PHONE:

778-6173

8/5 7/17/0

To: Arnie Frances/AE/DuPont@DuPont
cc: Megan A OBrien/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont
Subject: Re: Kevlar in PET resins

The specific concept I had proposed here was to mill/produce Kevlar® nanopulp in ethylene glycol and use this material as monomer feed to the polymerizer, thus directly incorporating the pulp in the resultant resin. The well dispersed nanopulp, even at low loadings, ought to improve some property of the resin (e.g. scratch, impact, fatigue resistance), making it a premium product for niche markets. This is not the same thing as putting Kevlar® pulp into PET resins by traditional methods - although there might be some value in that too.

For either option, I suggest that you are the correct contact in AFS. If there's anything I can do to facilitate the interaction between Crystar® (P&IP) and AFS, please let me know.

Regards,
Sam

Megan A OBrien

Megan A OBrien

To: Arnie Frances/AE/DuPont@DuPont
cc: Sam L Samuels/AE/DuPont@DuPont, Kenneth B Atwood/AE/DuPont@DuPont, Megan A OBrien/AE/DuPont@DuPont
Subject: Kevlar in PET resins

Hi Arnie,

My name is Megan O'Brien and I'm the Market Development Manager in Crystar(R) polyester resins. I also lead the top line growth through innovation for our business and just held an idea session last week.

Sam Samuels was in the meeting and he said you're interested in finding places where you can sample Kevlar(R) particles with other base polymers. At present, we can incorporate Teflon(R) and Surllyn(R) particles into our PET resins and I wanted to see if there was an opportunity to do the same with Kevlar(R).

I've copied our Technology Manager, Ken Atwood, on the note and Sam said he would be interested in helping if he could as well.

Appreciate your thoughts.

Megan O'Brien
440-877-0788

EXPERIMENTER

DATE

WITNESSED BY

DATE

NO WRITING UNDER INSERT

Exhibit 2

D-289

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [redacted] Author: HANSEN Cost Code: 944-0251 DRT 2-018-1

Object of Test PET w/ 0.05% K₂N₂O₈

Operator (8-4) (4-12) 42-5665 (12-8) L. S.

MONOMER CYCLE

[illegible]

KP-8				Ingredients Added		(Time 1900)	Ingredients Removed	
DMT	2C	Cat.	NO.	Inhibitor	Test Ingredients		MeOH	2C
Time	1900	1900	1900					
Amount	40 #	26 #	42.6 G			26 W / Kulan (1853)	2200	2235
Time Batch dropped to Clean						1 #	5400	500

Time Batch dropped to Clave..... Press on empty clave..... mm Hg in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed..... (check). Time Extension started 0135; completed 0230

Total Polymer Extruded..... Cut Flake 36.0 lbs Waste 2.2 lbs

Sample No's: Beginning RV Middle RV End RV Desired RV

RUNNING LOG

Time	RUNNING LOG
1900	Changed still and began heat on.
2130	Read out gas on still to help Mech. to come off.
2220	Mach stop coming off switched to 24 cycle.
2235	26 cycle completed, preparing to drop batch to close.
2250	Batch in close, started agit. and D.T.
0110	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0120	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0125	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0130	Air pressure at 20 PSI, preparing to heat batch.
0230	Completed washing batch, blue draining, sample to lab.
0240	Blew heel, blew Cold Temp, put Close Under Veen.
0355	Changed 30 lbs of 26 for CBO, set agitator at 12 RPM, took parcel.
0515	Extended CBO, blew Cold Temp, put Close under Veen.
0615	Checked leak rate at 14.4 mm/hr.
0720	Batch T.D. still out, HCON C&P.

"Dacron"® Research Laboratory
POLYMER BATCH UNIT

Date Started: [redacted] Author: HANSEN Cost Code: 8414-0511 DRT: 2-018-2

Object of Test PET w/ 0.05% KEVLAR

Operator (84) 80 (412) W. Segg (128) L.S.

MONOMER CYCLE

[illegible]

RP-8				Ingredients Added		26 W/KEVLAR (1.53)		Ingredients Removed	
	DMT	2G	Cat.	TIO.	Inhibitor	Test Ingredients	MeOH	2G	
Time	0630	0630	0630			0630	0955	0915	
Amount	40 lbs	26 lbs	42.6 CL			1 lbs	600	500	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOClave CYCLE

[illegible]

Valve to Instr. Line Closed..... (check). Time Extrusion started 1230; completed 1320

Total Polymer Extruded 30.0 Cut Flake 27.4 Waste 2.6

Sample No's: Beginning.....RV.....Middle.....RV.....End.....RV.....Desired RV.....

Those

RUNNING LOG

0635 Charged ingredients to still, turned on heat, took patrol.
8:20:52. Batch
0800 Batch to Still on main cycle
0855 main cycle complete, process Temp At 213c. will switch to 26 cycle
0915 26 cycle complete, preparing to drop batch to Clave.
0930 Batch to Clave. Started D.T. And Agitator took patrol Heat OFF Still
1156 Air Pressure At 35 PSI. I lowered Agit Speed to 9 RPMs
1210 Air Pressure At 35 PSI. I lowered Agit Speed to 6 RPMs
1210 Air Pressure At 30 PSI. I lowered Agit Speed to 3 RPMs
1215 Air Pressure At 21 PSI. I lowered Agit to 1 RPM preparing to Empty
Batch
1336 Completed Casting Batch Clave-Draining.
1420 Blew Hot & Cold Traps, Clave Under VAC. had problem closing VAPOR Line Valve.
1435 Charged Ciba to Clave
1645 Extended R.O. from cold trap & put Clave under Vacs. (BU cooling)
1840 Checked leak rate @ 4.8 mtorr/hr

"Dacron" Research Laboratory POLYMER BATCH UNIT

Date Started: [REDACTED] Author: HANSEN Cost Code: 8114051 D.R.T. 2-019-1Object of Test: PET w/ 0.12% KevlarOperator (8-4) W. Sugg (4-12) W. Sugg (12-8) L.S.

MONOMER CYCLE

Patrol	Test Limits													
			1900	2000	2100	2250								
Batch Temp.			44	169	193	226								
Bot. Col.			36	124	170	174								
Top Col.			27	74	111	92								
Drop Line			262	233	242	298								
Drop Valve			223	202	201	239								
MeOH Rec. Level			0	0	4800	0 ft								
2G Rec. Level			0	0	0	500								
Still Dow Vent			31	30	31	31								
			279	278	277	280								

	DMT	2G	Cat.	TiO ₂	Inhibitor	Test Ingredients	MeOH	2G
Time	1900	1930	1900			1900	2135	
Amount	40 lb	36 lb	42.6 GR			2.2 lb	6200	

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCLAVE CYCLE

Patrol	Test Limits													
			2200	2300	2400	2550								
Batch Temp.			269	277	298	279			270					
Clave Pressure			0.5	0.5	0.5	2.7			—					
Agitator RPM			12	12	12	3			12					
Air Pressure			27	28	28	22			—					
Ext. Valve			280	280	280	280			281					
Ext. Nozzle			290	291	290	291			291					
Vapor Take-off			285	294	292	297			291					
Clave Dow Vent			285	301	291	300			274					
Vapor Take-off Flange			294	301	296	301			294					
			287	271	287	290			284					

Valve to Instr. Line Closed..... (check). Time Extrusion started 0255; completed 0200Total Polymer Extruded..... Cut Flake 31.8 162 Waste 1.5 162

Sample No's.: Beginning....., RV..... Middle....., RV..... End....., RV..... Desired RV.....

Time

RUNNING LOG

1900	Changed still & turned heat on
2135	Mon cycle completed, awaiting 2G cycle.
2150	2G cycle completed, preparing to drop batch to Clave.
2200	Batch in Clave, started agit. and D.T.
0025	Air pressure at 35 PSI, lowered agitator to 8 RPM.
0035	Air pressure at 35 PSI, lowered agitator to 6 RPM.
0045	Air pressure at 30 PSI, lowered agitator to 3 RPM.
0050	Air pressure at 22 PSI, preparing to extend batch.
0200	Completed pasting batch, Clave draining.
0315	Completed blowing feed, blowing cold traps, and puffing Clave under vac.
0330	Changed 30 ml of 2G for CBO, ppt. at 12 cm, kept control.
0445	Extended CBO, blew cold traps, put Clave under vac.
0600	Checked leak rate at 9.6 mm/hr.

"Dacron"* Research Laboratory
POLYMER BATCH UNIT.

Date Started: [redacted] Author: HANSEN Cost Code: RM-0251 DRT: 2-09-2
Object of Test: PET w/ 0.1% KEVLAR
Operator (84): RH# (4-12) (12-8)

MONOMER CYCLE

[illegible]

RP-8			Ingredients Added		2G 4/NEAR (1.858)		Ingredients Removed	
	DMT	2G	Cat	TIO	Inhibitor	Test Ingredients	MeOH	2G
Time	0620	0620	0620			0620	0820	0825
Amount	40 gr	26 gr	426 gr			2.2 lbs	1000	500

Time Batch dropped to Clave..... Press. on empty clave..... mm Hg. in..... min.

MeOH Receiver valve OPEN when vessel is empty.....(check).

AUTOCCLAVE CYCLE

[illegible]

Valve to Instr. Line Closed..... (check), Time Extrusion started... 11:30: completed 11:30

Total Polymer Extruded 30.0 Cut Flakes 28.2 Waste 1.8

Sample No's.: Beginning RV, Middle RV End RV Desired RV

4KV /6.97

Time

RUNNING LOG

0620	Changed ingredients to Shell
0625	Turned on agit and pump, tank Patrols
0830	MOON cycle Comp. Switched to 2B cycle
0835	2B cycle Comp. Preparing to Draw Agitate
0845	Batch in Close - Started DT. Started agitator @ 12 RPM.
1105	Pressure 35 PSI, Lowered to 8 RPM's.
1120	Pressure 35 PSI, Lowered to 6 RPM's
1125	Pressure 30 PSI, Lowered to 3 RPM's
1130	Pressure 20 PSI, Preparing to Exhale Batch
1230	Comp. Starting, Close draining.
1320	Slow CT. & Hand. Close under Vac.
1430	Chg 30" 2B to Close for CSD, agitator @ 12 RPM.
1530	Exhale CSD, Slow CT. Close under Vac.
1720	Checked tank rate @ 8.0 m ³ /hr.

Operator (8-4) (4-12) *W. S. S. S.* (12-8) *L.S.*

Patrol	Test Limits	1800	1900	2000	2100					
Batch Temp.		47	174	196	206					
Bot Col		48	147	177	153					
Top Col		44	97	129	101					
Drop Line		277	246	255	292					
Drop Valve		289	223	228	240					
MeOH Rec. Level		0	500	5800	855					
2C Rec. Level		0	0	0	500					
Still Dow Vent		31	30	31	31					
		281	277	277	277					

Kp-8				Ingredients Added		JG W/ KAPLAR (2.272)		Ingredients Removed	
	DMT	2G	Ce	TI0.	Inhibitor	Test Ingredients	MeOH	2G	
Time	1800	1800	1800			1800	2005	2020	
Amount	40#	26#	42.6 gr.			8.8 lbs	6200	500	

MeOH Receiver valve OPEN when vessel is empty.....(check).

[illegible]

Sample No's: Beginning _____ EV _____ Middle _____ EV _____ End _____ EV _____ Desired EV _____

1800	Charged still and turned heat on.
2005	Mash cook comp. Switched to 2G cycle.
2020	2G cycle comp. Preparing to drop batch to chive.
2025	Batch in chive started agit. and PT.
2245	Min. pressure @ 35 PST. Lowered agit. to 2 RPM.
2300	Min. pressure @ 35 PST. Lowered agit. to 6 RPM.
2305	Min. pressure @ 30 PST. Lowered agit. to 3 RPM.
2310	Min. pressure @ 20 PST. Preparing to extend batch.
2400	Completed cooking batch. Plant draining.

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